



## ***Parapinnixa bolagnosi*, a new species of pinnotherid crab from Cubagua Island and Los Frailes Archipelago, Venezuela (Crustacea: Brachyura: Pinnotheridae)**

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### **Abstract**

*Parapinnixa bolagnosi* **new species**, is described from Cubagua Island and Los Frailes Archipelago in the Caribbean Sea off Venezuela based on female specimens. The new species is distinguished from the other nominal species of the genus by having a third maxilliped with a biarticulated palp and by the absence of an exopod. The description of the genus *Parapinnixa* Holmes, 1894, is amended to accommodate these two distinctive characters.

**Key words:** Crustacea, Brachyura, Pinnotheridae, *Parapinnixa bolagnosi*, new species, Caribbean, Venezuela

### **Resumen**

Sobre la base de especímenes hembras, *Parapinnixa bolagnosi*, nueva especie, es descrita de la Isla Cubagua y el Archipiélago Los Frailes en el Mar Caribe de Venezuela. La nueva especie se distingue de las otras especies nominales de este género por tener un tercer maxilípodo con un palpo biarticulado y la ausencia de su exópodo. El género *Parapinnixa* es enmendado para acomodar estos dos caracteres distintivos.

**Palabras clave:** Crustacea, Brachyura, Pinnotheridae, *Parapinnixa*, *Parapinnixa bolagnosi*, nueva especie, mar Caribe, Venezuela

### **Introduction**

The genus *Parapinnixa* Holmes, 1894, comprises nine American species: four from the Eastern Pacific (California to Ecuador) and five from the Western Atlantic (North Carolina to Colombia) (Thoma *et al.* 2005). All of these species possess a transversally ovoid carapace, walking legs that decrease in size from first to fourth and a third maxilliped with a palp composed of three articles and an exopod that lacks a flagellum. During a recent bionomic study of Cubagua Is. in the Caribbean Sea off Venezuela, some pinnotherid crabs of the genus *Parapinnixa* were collected in shallow water beneath rocks and on the green alga *Halimeda opuntia* (Linnaeus) Lamouroux. Comparison of these specimens with the presently known nominal species of *Parapinnixa* shows that our material represents a distinctive new species, which can be distinguished by the maxilliped having a biarticulated palp and lacking of exopod.

The type material has been deposited in the Museo Marino de Margarita (MMM), Margarita Island, Venezuela. Abbreviations used are CL, carapace length; CW, carapace width; MXP3, third maxilliped; WL, walking legs. All measurements are in millimeters.

## Systematics

### Pinnotheridae de Haan, 1833

#### *Parapinnixa* Holmes, 1894

**Type species.** By monotypy *Pinnixa ? nitida* Lockington, 1876.

**Emended diagnosis** (modified from Rathbun, 1918; modification indicated by underlining). Carapace calcified, much broader than long, anterior margin nearly straight, frontal process deflexed. Orbits nearly round. Antennules oblique or transversally plicate, fossettes communicating with each other beneath front. Buccal area small, very broadly triangular. External third maxilliped with ischium rudimentary, merus large, sub-triangular; palp two or three articles, terminal segment joined to tip of preceding one; exopod, when present, without flagellum. First leg largest, others successively diminishing in length, last pair very small. Abdomen of female, small, not covering sternum. Abdomen of male with telson rounded.

**Distribution and host.** Atlantic Ocean: North Carolina to Brazil. Pacific Ocean: California to Galápagos Is. A presumed extralimital record to SE Siberia. With Polychaeta; ? Echinoidea (Schmitt *et al.* 1973; Thoma *et al.* 2005).

**Taxonomic remarks.** Despite having MXP3 with two articles, several other outstanding features support the inclusion of our material in the genus *Parapinnixa*. These include a carapace broader than long and calcified, buccal region very small and triangular, MXP3 with rudimentary ischium, merus larger and triangular and the relative length of the WL  $1 > 2 > 3 > 4$ . However, the generic characters MXP3 palp with three articles inserted end to end and exopod without a flagellum do not apply to this species, which has a palp with only two articles without an exopod. Instead of erecting a new, and probably paraphyletic, genus for this atypical species, we chose to emend the diagnosis of *Parapinnixa* to accommodate it.

Other genera of Pinnotheridae with the palp of the MXP3 composed by two or three segments include *Calyptraeotheres* Campos, 1990 (see Campos 1999; Hernández-Ávila & Campos 2006) and *Dissodactylus* Smith, 1870 (see Griffith 1987).

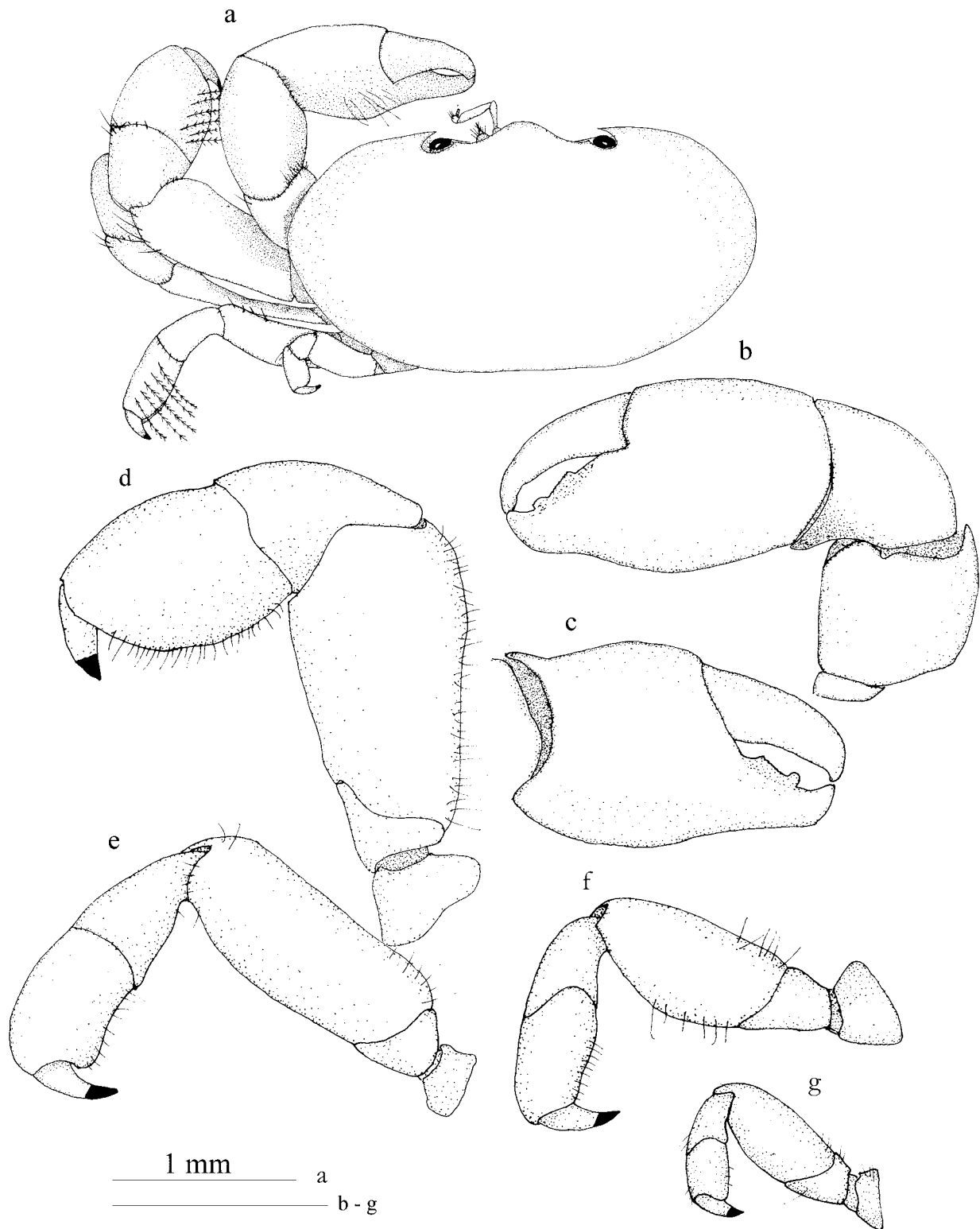
#### *Parapinnixa bolagnosi* new species

Figs. 1–2

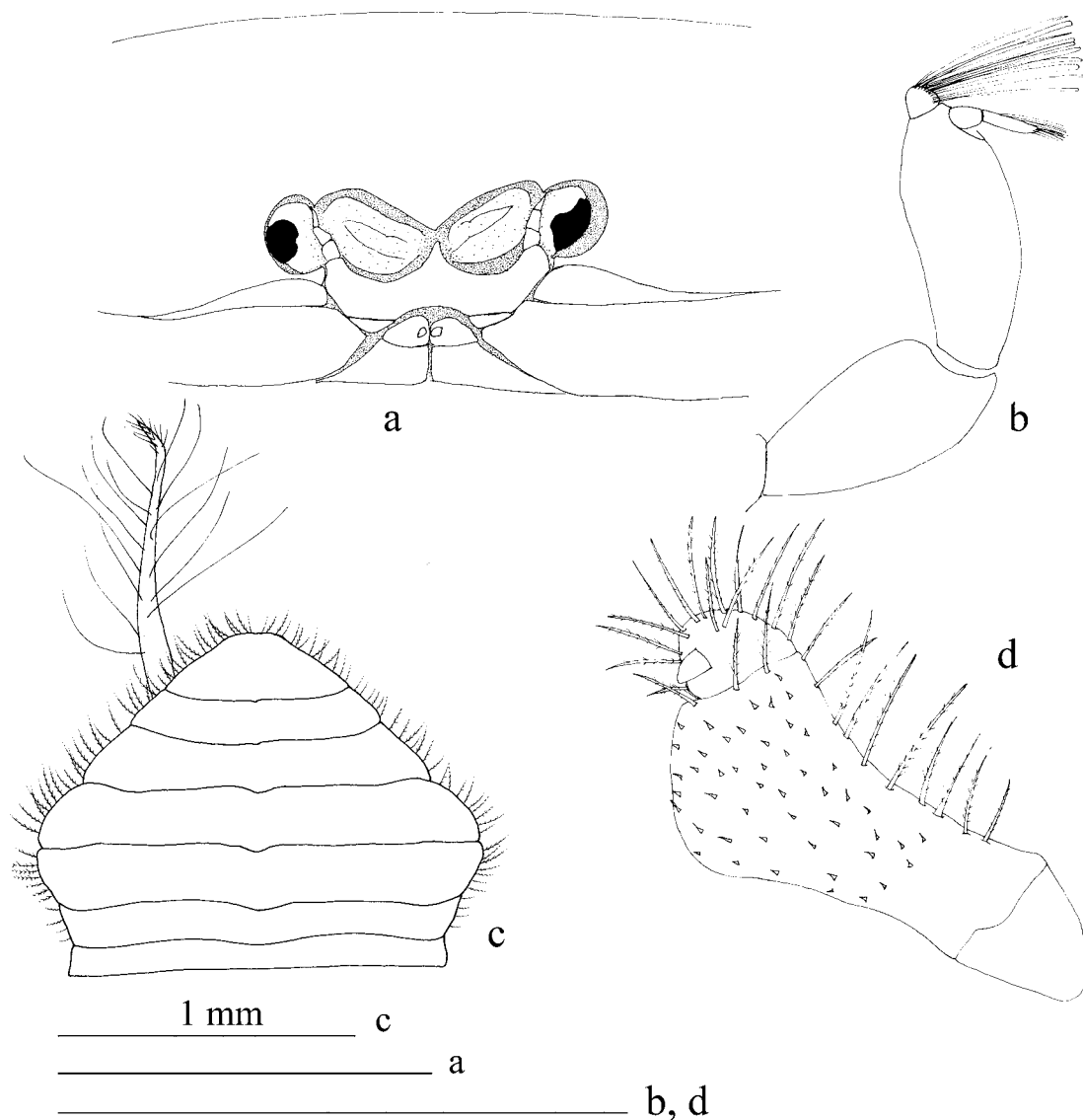
**Material examined.** Cubagua Is., Venezuela.— Holotype: MMM.cr.03252, female, (CL= 1.88 CW= 3.68), Punta Yirú, 10°48'24.9"N 64°9'4.32"W, on rocks on *Thalassia* bed., 1.7 m depth, 75 m from the coast, coll. I. Hernández-Ávila & A. Gómez, November 11, 2003. Paratypes: Cubagua Is., Venezuela.— MMM.cr.03251, 1 female, (CL= 1.40 CW= 2.84), Playa El Medio, 10°50'14.7"N 64°9'14.88"W, associated with *Halimeda opuntia*, 3 m depth, 100 m from the coast, coll. I. Hernández-Ávila, August 27, 2003. MMM.cr.03253, 1 female, (CL= 1.78 CW= 3.40), Playa El Guichere, 10°48'15.06"N 64°9'37.32"W, on rocks, 2 m depth, 50 m from the coast, coll. I. Hernández-Ávila & A. Gómez, December 8, 2003. MMM.cr. 03254, 1 female, (CL= 1.0 CW= 2.14), Barranca Blanca, 10°48'4.98"N 64°10'25.68"W, on rocks, 2 m depth, 50 m from the coast, coll. I. Hernández-Ávila & A. Gómez, January 22, 2004. MMM.cr.03255, 1 female, (CL= 1.72 CW= 3.44), Punta El Olivito, 10°48'3.42"N 64°11'16.5"W, on rocks, 2.5 m depth, 75 m from the coast, coll. I. Hernández-Ávila & A. Gómez, February 19, 2004. Los Frailes Archipelago, Venezuela.— MMM.cr. 03662, 1 female (fragmented), (CL= 2.36 CW= 4.32), La Pecha, 11°06'N 63°48'W (approx.), 8 m depth between oysters, coll. A. Tagliafico, February, 2004.

**Description.** Carapace (Fig. 1a), very small, ovate, smooth, width 1.83–2.02 times length, dorsally convex; anterior margin somewhat straight, laterally arcuated, unarmed; front-orbital width 1/3 carapace width, front triangular, deflexed, tip hidden dorsally. Orbits rounded, eyes small, dorsally visible. Antennules folded

in oblique fossettes (Fig. 2a). Epistome (Fig. 2a) with biconcave dorsal margin, medially pointed, wider than ventral concave margin, lateral margins obliquely curved. Buccal area subtriangular, basal breadth 1/4 carapace length.



**FIGURE 1.** *Parapinnixa bolagnosi* new species. a, Holotype, dorsal view; b–g, Paratype; b, cheliped, outer surface; c, cheliped, inner surface; d–g, walking legs 1–4; b–c setae removed.



**FIGURE 2.** *Parapinnixa bolagnosi* new species. a, Holotype; frontal view; b-d, Paratype, b, antennae, c, abdomen; d, third maxilliped.

MXP3 (Fig. 2d) subtrapezoidal, merus broadly subtrapezoidal, fused with ischium, distal margin slightly sinuous, dorsal margin slightly concave, with large plumose setae, ventral margin broadly convex, outer surface with short setae. Palp with two articles not extending beyond distal margin of merus, dactylus absent, carpus subtriangular, with large plumose setae; propodus minute, digitiform, exopod absent.

Chelipeds (Fig. 1b) symmetrical, stout, contour rounded, nearly as long as WL 1, merus short, latero-external surface subtrapezoidal, flattened; carpus rounded, merus and carpus with short setae on inner margin. Chelae (Fig. 1c) tomentose, length of palm subequal to height, longer than fingers, margins little concave, with minute granules on outer surface, mesiodorsal row of short setae on inner surface. Fingers subtriangular, curving at tip where they cross, base of the pollex wider than dactylus, cutting surface of pollex with small, medial serrate crest that ends in subtruncated tooth; cutting surface of dactylus smooth, gently curved, dorsal margin convex.

WL (Figs. 1 d–g) decreasing in order from the largest WL1 to the smallest WL4; merus of WL1 (Fig. 1d) widening distally, inner surface proximally concave to accommodate the ischium-merus of cheliped, dorsal

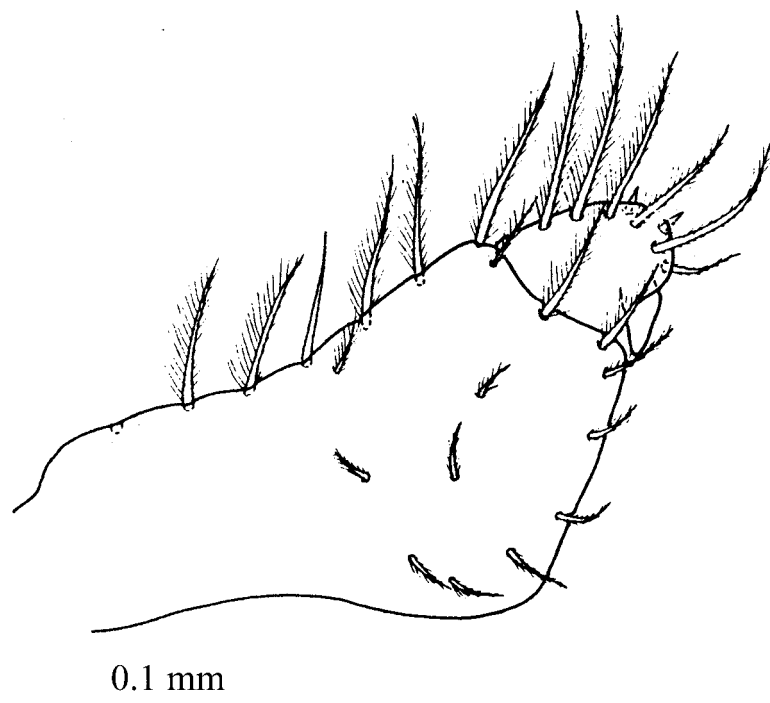
ridge setosed, distal width around 0.6 times length; carpus short, stout, dorsally subelliptical and convex, propodus tapering distally, subelliptical, ventral margin with short simple setae, dactylus small, subconical, somewhat falcate, tip corneous.

WL2 (Fig. 1e) compressed, merus little shorter but much slender than merus of WL1, greatest width 0.4 times its length; carpus longer than wide, subtriangular, propodus subrectangular, dorsal margin gently curved, ventral margin concave, ending in a distal lobe, dactylus thin, somewhat falcate, tip corneous.

WL3 (Fig. 1f) smaller than WL2, merus width almost 0.5 times its length; carpus subtriangular, much shorter than subrectangular propodus, dactylus subconical, somewhat falcate, tip corneous.

WL4 (Fig. 1g) smallest, reaching distal margin of merus of WL3; merus width around 0.5 times its length; carpus, propodus and dactylus similar in shape to WL3 but proportionally smaller.

Abdomen (Fig. 2c) with six free segments and telson; third somite the widest; lateral margin convex; somites 4–6 tapering distally, lateral margins slightly convex; lateral margins of somites 2–6 with plumose setae; telson slightly more than twice as wide as long; subtriangular, with broad rounded corners, margin with long setae



**FIGURE 3.** Third maxilliped of *Parapinnixa* cf. *beaufortensis* sensu Werding and Müller 1990 (not, *P. beaufortensis* Rathbun, 1918).

**Etymology.** This species is named in honor to Juan Antonio Bolaños Curvelo, Professor of Carcinology of the Escuela de Ciencias Aplicadas del Mar, Universidad de Oriente, Venezuela, for his contributions to our knowledge of the larval development and taxonomy of decapods in northeastern Venezuela.

**Remarks.** Werding & Müller (1990) reported, with reservations, a male specimen as *Parapinnixa* cf. *beaufortensis* Rathbun, 1918, which was collected in Bahía Chengue, near Santa Marta, Colombia. After a careful examination of Werding & Müller's figure of the MXP3 (Fig. 3), their specimen appears to have closer affinities with *P. bolagnosi* since both share a biarticulated palp and lack of exopod. The palp of the third maxilliped of *Parapinnixa beaufortensis* Rathbun, 1918 has three articles. Since no males of *P. bolagnosi* are presently available for study it is not possible to determine whether or not Werding & Müller's Colombian specimen is conspecific or if it represents a new species.

**Ecological remarks.** *Parapinnixa bolagnosi* has been collected associated with rocks in *Thalassia* beds, on aggregations of the calcareous algae *Halimeda opuntia*, between oysters, in Cubagua Island and Los Frailes Archipelago. One lost specimen was collected in the sponge *Ircinia* sp.

## Acknowledgments

We are indebted to Richard W. Heard, and Brent Thoma for their careful revision of an early draft. Very constructive criticism was received from two anonymous referees and the associate editor Pedro Castro. The senior author thanks Alfredo Gómez Gaspar (Museo Marino de Margarita) for his support in the field and to Alejandro Tagliafico for the specimen collected in La Pecha, Los Frailes Archipelago. This work was partially funded by a grant from FONACIT S1-559 Estudio Bionómico de la Isla de Cubagua and a grant from CONACyT S52903-Q (México) Sistemática, relaciones filogenéticas y evolución de los géneros americanos de la subfamilia Pinnotherinae (Crustacea, Brachyura, Pinnotheridae). The first author is a scholarship holder of the FONACIT under contract 200601239, the second author is a scholarship holder of the Consejo Nacional de Ciencia y Tecnología (CONACyT), México and a postgraduate student at the Facultad de Ciencias Biológicas, Universidad Autónoma de Nuevo León, México.

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